

Preventive Practices Adopted by Hepatitis "C" Patients in Alexandria-Egypt.

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Abstract: Background: Hepatitis C viral infection is one of the most contagious diseases. It is approximately 10-15 times more infectious than HIV. **Objective:** the present study aimed to assess preventive practices adopted by hepatitis C patients in Alexandria and identify factors affecting their practices. **Settings:** The study was carried out at three outpatient hepatic clinics representing: Ministry of Health and Population (Shark El- Madina Hospital), Ministry of Higher Education (Main University Hospital) and Health Insurance Sector (Gamal Abdel-Nasser Hospital). **Subjects:** subjects of the study were 450 chronic hepatitis C adult patients of both sexes; a sample of 150 patients was selected from each of the above mentioned settings. **Tools:** One tool was used in this study (**hepatitis C patient's basic data and preventive practices structured interview schedule**). **Results:** Findings of the present study revealed that more than three quarters (76.7%) of the patients had low preventive practices score regarding hepatitis C virus, 22.2% of them had moderate preventive practices score and only 1.1% of them had high preventive practices score. Patients' age, sex, marital status, occupational status, monthly income and patients' knowledge level had significant effect on their preventive practices. **Conclusion:** The study concluded that most of the studied patients had low level of preventive practices about hepatitis C infection.

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1. Introduction

Hepatitis C virus is one of the most common viral hepatitis that affects the liver. It is a lethal human virus that can cause a chronic lifelong infection of the liver resulting in progressive liver disease that culminates in the development of cirrhosis and hepatocellular carcinoma (HCC) ⁽¹⁻⁴⁾.

Nowadays, hepatitis C becomes the concern both to developed and developing countries as it continues to cause substantial morbidity and mortality worldwide. It causes more lost years of life and illness than any other infectious disease ⁽⁵⁾. It is now the most common cause of liver transplantation and premature mortality especially in persons aged 55-64 years ^(6,7).

Globally, The World Health Organization (WHO, 2012) had declared hepatitis C a major health problem with approximately **170 - 200** million people are living with chronic hepatitis C representing 3% of the world's populations ^(8,9).

In Egypt the situation is quite worse. Epidemiologically, Egypt shows higher level of anti-HCV antibodies than other countries. According to the National Academy of Sciences (2010) **Egypt** has the highest recorded prevalence of Hepatitis C Virus (HCV) in the world with an estimate of **14.7%** of the population are infected and **9.8 %** are chronically ill. In addition, more than 500,000 new HCV infections occur each year. This is ten times greater than any other country in the world ^(10,11). A recent forecast modeling study for prediction of hepatitis C

seropositivity among Egyptians has shown that in 2020 the prevalence is expected to be continuing at a rate of 7/1,000 persons/year, indicative of possibly ongoing hyper-epidemic transmission ⁽⁶⁾.

HCV is one of the most contagious diseases that have great social and economic impact which may touch the future of the young generation and hinder the community. It is approximately 10-15 times more infectious than HIV ^(1, 5). According to the World Health Organization (2012) hepatitis C virus is most commonly transmitted through exposure to infected blood. This can occur through; contaminated blood transfusions, blood products and organ transplants, injections given with contaminated syringes and needle-stick injuries in health-care settings or through needle-sharing among drug-users. Sexual and perinatal transmission may also occur, although less frequently. Other modes of transmission such as social, cultural, and behavioral practices using percutaneous procedures (e.g. ear and body piercing, circumcision, tattooing) can occur if inadequately sterilized equipment is used ^(4,12,13). **According to the National Academy of Sciences (2010)**, the primary route of HCV transmission in developed world is intravenous drug use (IDUs) while in developing world, the main methods for these widespread are due to unscreened blood transfusions and unsafe medical procedures ⁽¹⁴⁾.

Therapy for hepatitis C is a rapidly changing area for clinical practices. Recently, the Food and Drug Administration (FDA) approved a combination of

subcutaneously administered pegylated interferon plus oral ribavirin for 48 weeks for hepatitis C treatment^(6,15). Although, successful HCV treatment require adherence to the prescribed dose of medication for the prescribed period of time, its side effect that interfere with the quality of life can hamper the treatment success in many cases^(2,3,16).

Unfortunately, there is no vaccine to prevent HCV infection, so reducing the burden of HCV infection requires implementation of primary prevention activities to reduce the risk for contracting HCV infection and secondary prevention activities to reduce the risk for liver and other chronic diseases in HCV infected persons^(2,6,17). In 2010, the World Health Assembly adopted resolution WHA63.18 which calls for a comprehensive approach to the prevention and control of viral hepatitis. Using a public health approach, the goal of the WHO viral hepatitis strategy is reduce the transmission of the various agents that cause viral hepatitis^(17,18).

From global perspective, the greatest impact on the disease burden associated with HCV infection will most likely be achieved by focusing efforts on primary prevention strategies to reduce or eliminate the risk of transmission⁽¹⁹⁾. These methods of prevention will be considered in relation to the individual routes or categories of transmission; blood transfusion, percutaneous exposure, organ transplantation, high risk drug or sexual practices and intrafamilial (non-sexual) and sporadic/community acquired infection⁽²⁰⁾.

The epidemiological approach provides community health nursing with the methodology and language to describe and analyze health issues⁽²¹⁾. The main concerns of the community health nurse as an epidemiologist is to apply epidemiological principles and knowledge of the disease process to emphasize primary prevention and health promotion through identification and modification of HCV risk factors. So this study is an attempt to assess the epidemiological characteristics of viral hepatitis C patients and identify the different risk factors behind their infection^(21,22).

Aims of the study

The aims of the study are to:

1. Assess preventive practices adopted by hepatitis C patients in Alexandria.
2. Identify factors affecting preventive practices adopted by hepatitis C patients in Alexandria.

Research questions:

1. What are the preventive practices adopted by HCV patient attending different health care settings in Alexandria?
2. What are the factors affecting preventive practices adopted by hepatitis C patients in Alexandria?

2. Materials and Method

Materials:

Research Design: Descriptive research design was used to carry out this study.

Setting:

The study was carried out in three outpatient hepatic clinics affiliated to: Ministry of Health and Population (Shark El- Madina Hospital), Ministry of Higher Education (Main University Hospital) and Health Insurance Sector (Gamal Abdel-Nasser Hospital). These clinics have the highest attendance rate.

Subjects:

• By using equal allocation method, a convenient sample of 150 viral hepatitis C patients was selected from each of the previously mentioned clinics. The total sample size was 450 patients of both sexes of viral hepatitis C patients.

Tool of study:

In order to fulfill the objective of this study, one tool was used: **hepatitis C patient's basic data and preventive practices structured interview schedule**. This tool was developed by the researcher after reviewing the recent related literature. It was composed of the following parts:

Part I: Personal and Socio-demographic data: It included the following data such as age, sex, place of residence, level of education, occupation, marital status, number of children, crowding index, family income, and the source of income.

Part II: hepatitis C patients' knowledge regarding the disease:

- A knowledge scale was developed to assess the knowledge of the patients about HCV
- The scale was composed of 50 statements to. It was divided into six main categories: the nature of the disease, modes of transmission, signs and symptoms, treatment and its side effect, patients' lifestyle and disease complications.
- The answer for each item was either "yes", "No", or "don't know". A score "one" was given to the correct answer and "zero" was given to wrong answer or missing answers or don't know. The maximum total score was 50.
- The answer of the patients were scored then summed together. The total score is categorized into three levels. These levels were poor, fair and good knowledge.
- Levels of knowledge were calculated based on expert opinion as the following:

- Poor knowledge:	<50%
- Fair knowledge:	50% - <75%
- Good knowledge:	75% - >75%

Part (III): Preventive practices adopted by the patients:

A scale composed of 9 items was developed and used by the researcher to identify infection control measures adopted by the patients to prevent spread of infection among family members.

- The response for each item was either “No”, “Yes”, or “not applicable”. A score “one” was given to the correct answer and “zero” was given to wrong, missing answer or not applicable. The maximum total score was 9.

- The responses of the patients were scored and summed together. The total score is categorized into three levels based on expert opinion as the following:

- **Low preventive practices score : <50%**
- **Moderate preventive practices score: 50% -75%**
- **High preventive practices score: >75%**

Moreover, this part included the interfamilial precautions: dealing with wounds, methods of getting rid of used wound gauze, dealing with blood spillage on the floor or furniture, methods of disposal of the syringe and the place of disposal. In addition, female patients’ preventive practices during menstruation as: types of used pads, method used to clean cloth pads, method of getting rid of sanitary pads, methods of cleaning blood spills on the ground or bath seats, and methods of dealing with underwear.

Method

1. Approval of responsible authorities was obtained through official letters from the Faculty of Nursing and after explanation of the purpose of the study.

2. The study tool was developed by the researcher after reviewing the recent related literature. Content validity of the constructed tool was assured by jury of 5 experts in the field of the study, their opinions and suggestions were taken into considerations and the tool was modified accordingly. Cronbach Alpha Coefficient test was used to ascertain the reliability of the tool ($r=0.87$).

3. A pilot study was carried out on a sample of 30 viral hepatitis C patients from outpatient clinics that was not included in the study sample (outpatient hepatic clinic of El-Kabary hospital) to ascertain the clarity, applicability and comprehensiveness of the tool and the necessary modifications were done accordingly.

4. Each patient was interviewed individually after brief explanation of the aim of the study. The interview took about 30 minutes for each patient. The study was conducted in a period of 6 months (from June to December 2012).

5. An informed consent was obtained from each patient before starting to fill out the interview sheet

6. Statistical analysis:

- The collected data were coded and analyzed using PC with the Statistical Package for Social Sciences (SPSS version 20).
- The level of significance selected for this study was $P \leq 0.05$. It was used as the cut off value for statistical significance.

a- Descriptive statistics:

- **Range (Minimum, Maximum), Arithmetic mean (\bar{X}), Standard deviation (SD):** They are used as measures of central tendency and dispersion respectively for normally distributed quantitative data.

- **Count and percentage:** were used for describing and summarizing qualitative data.

b- Analytical statistics:

- **Chi square (χ^2):** It was used to test the association between two qualitative variables or to detect difference between two or more proportions.

- **Monte Carlo test (^{MC}P)**

3. Results:

Table (I): Illustrates the personal and socio-demographic characteristics of patients. Regarding the patients’ age, it ranges from 17-74 years with a mean of 40.2 ± 12.2 years. Less than one third (29.6%) of the patients were 40 to less than 50 years while, less than one quarter (22.9%) were less than 30 years. Those who were in the age group of 30 to less than 40 years and 50 to less than 60 years constitute (22.7% and 19.6%) of the sample respectively). Only 5.2% were in the age of 60 years and over. Concerning the sex, slightly more than two thirds of the patients (67.3%) were males, while the rest (32.7%) were females. As regards the patients’ residence, more than half (54.9%) of them were living in sub-urban and urban areas, while the rest (45.1%) were living in rural areas. Moreover, 43.7% who were living in sub-urban and urban areas had previous stay in rural areas with a mean duration of 21.9 ± 8.7 years.

In relation to the patients’ marital status, the table reveals that the majority (84%) of the patients were married with a mean duration of 17.9 ± 10.8 years. More than one tenth (15.1%) of them were single and only very few (0.9%) were widows and/or divorced. It is apparent from the table that, the crowding index ranges from 0.3 to 8 with a mean of 2.4 ± 1.0 . Slightly more than half (50.9%) of the patients’ families had crowding index of four to less than five persons / room. More than one quarter (27.1%) of them had crowding index of two to less than four persons / room and less than one fifth (18%) of them had crowding index of more than five persons / room. Only 4% of them had crowding index of less than two persons / room. With respect to patients’ education, the table shows that less than half (46.4%) of the patients had

secondary/ technical education and slightly less than one quarter (24%) of them were illiterates. However, 15.6% of the patients attain basic education. Those who could attain university/higher education constituted 7.6% and (6.4%) of them could just read and write. Regarding the patients' occupation the table reveals that, slightly more than one third (34.4%) of the patients were not working, while less than one third (32.7%) of them had professional work. Just one tenth (10.2%) of them had semi skilled work and 8.9% of them were unskilled. While skilled and trade work constituted 7.6% and 6.2% respectively.

The same table also shows that, less than half (40.4%) of the families had monthly income ranged from 500-1000 L.E, more than one third (36.2%) of them had monthly income of 1000 or more and those who had monthly income of 250-500 or less than 250 constituted 10.9% and 12.4% respectively. Moreover, the table revealed that more than half (58%) of the families reported monthly income insufficiency, 40.2% of them had enough monthly income and the minority (1.8%) of them had enough monthly income and can save.

Table (II) Portrays the Preventive practices adopted by the studied patients and their families regarding the following items:

Sharing the patients' personal equipments as razors and tooth brush: The vast majority (99.8%) of the patients stated that they didn't share their personal equipments with their families, while the rest (0.2%) of them were always sharing.

Sharing nails trim instruments: More than half (54%) of the patients mentioned that their nails trim instruments used by all their family members, while the rest (46%) of them didn't share.

Reuse of disposable syringes: In this regard, just more than three quarters (76.2%) of the patients were using the syringes just once however, 23.8% of them who were reusing the syringes several times.

Informing the health care personnel about their illness: The highest percent (81.8%) of the patients were reporting about their illness before any medical interventions, however less than one fifth (18.2%) of them didn't report.

Donating blood to their family member/others if needed: With respect to this item, it was observed that the majority (97.6%) of the patients didn't agree to donate blood to their family member or others, while the minority (2.4%) of them agreed if they needed.

Informing the hairdressers/ barber about their illness: Just more than three quarters (75.8%) of the patients didn't mention that they have HCV when going to hairdressers /barber, while slightly less than one quarter (24.2%) of them were mentioning.

Ask the hairdressers/ barber for isolation of patients' instruments: It was found that, the highest

percent (72.2%) of the patients didn't ask the hairdressers /barber not to use their tools for other clients, however more than one quarter (27.8%) of them were not stressing this issue.

Safe sex: Concerning this item, the majority (96.6%) of married patients reported that they were not using condoms during sexual intercourse, however the rest (3.4%) of them were using.

Breastfeeding: The highest percent (88.55%) of nursing female patients properly agreed that to stop breastfeeding when they having cracked nipple, while the rest (11.5%) of them didn't.

Fig.(1):clarifies that more than three quarters (76.7%) of the patients had low preventive practices score regarding hepatitis C virus, 22.2% of them had moderate preventive practices score and only 1.1% of them had high preventive practices score

Table (III): Shows patients' practices of dealing with wounds. It was observed from the table that nearly two thirds (66.9%) of the patients covered the wound with cloth or gauze until the bleeding stopped and more than half (52.4%) of them made disinfection with antiseptic solution. Almost equal distributions (14.4% and 13.6%) of them wash the wound with soap and water and use antiseptic solution or wash the wound with water and cover it until the bleeding stopped. Those who washed the wound with water only and squeeze their wound constituted 2.7% and 0.2% respectively.

Regarding disposal of used wound gauze, it is noted from the table that the highest percent (80%) of the patients were throwing it directly in the garbage, whereas just one tenth (10.9%) of them were putting it in a plastic bag before throwing in the garbage. Those who burned it or throw it in toilet constituted 2.4% and 2% respectively. Only 4.4% of them used other methods as bury it or throw it in the canal.

In relation to methods of dealing with blood spillage on the floor or furniture, slightly more than two fifths (41.1%) of the patients were washing the floor with water only and similarly (40.7%) of them were wiping the floor or furniture with a cloth only. Nearly one quarter (24.7%) of them stated that they were cleaning the surface with disinfectant solutions like chlorine, detol and petadine. Very few (0.2%) of them let the blood on the floor until dry.

With respect to disposal of syringe after use, less than three quarters (71.3%) of the patients reported that they were covering the syringe before throwing it, while the rest of them (28.7%) didn't. Additionally, more than two thirds (68.8%) of those who cover the syringe were throwing it in garbage and those who mentioned that they were putting it in glass or plastic container and using other methods like throwing it in canal or burying it constituted 4.8%, 3.6% respectively. Only few (1.2% and 0.7%) of them stated

that they were throwing it in toilet and burning it. The table lastly reveals that, about one third (32.6%) of the patients mentioned that the reason for not covering the syringe after being used was pending the needle, whereas those who were receiving it in pharmacy or burning it represented (26.4% and 22.5% respectively). More than one tenth (12.4%) of them reported that this is their habit. However, throw the syringe in toilet and throw it safely were other reasons mentioned by (3.9% and 2.3%) of the patients respectively.

Table (IV): Female patients' preventive practices during the menstruation. The table presents that more than two thirds (68%) of female patients were using sanitary pads during the menstruation, whereas the rest (32%) of them were using a cloth pads. Regarding cleaning cloth pads, it was observed from the table that the highest percent (83%) of the female patients were washing them alone while more than one tenth (14.9%) of them were boiling the pads then washing them. Those who were washing the cloth pads in washing machine with other clothes represented 2.1%. The table also reveals that more than two thirds (69%) of female patients were disposing the sanitary pads by putting them in a well closed plastic bag and throwing them in the garbage whereas, less than one third (30%) of them were throwing them directly in the garbage. Only 1% of them were burning the pads.

In relation to methods of cleaning blood spills on the ground or bath seats, the table shows that more than one quarter (26.5%) of female patients did nothing for the blood spills. More than half (59.2%) of them were cleaning the blood spills with water only and less than one third (31.3%) of them were using disinfectant such as chlorine and detol to clean the seat and the ground. Only 3.4% of them mentioned that they were using the tissue paper only to clean the spills. The table lastly clarifies that, less than two thirds (61.2%) of the patients were washing their underwear in washing machine with clothes of other family members, while less than one third (30.6%) of them were washing them separately compared to 8.2 % of them who were boiling them.

Table (V): reveals the patients' knowledge level about hepatitis C virus. It can be observed from the table that less than half (46.4%) of the patients had fair level of knowledge about the nature of HCV, while 29.6% of them had good level of knowledge and 24% of them had poor knowledge level. With respect to patients' knowledge about HCV modes of transmission, it was found that more than two fifths (43.6%) of them had fair level of knowledge, more than one quarter (28.4%) of them had poor knowledge level and almost similarly (28%) of the patients had good knowledge level. It can also be observed that less than half (46%) of the patients had fair level of knowledge regarding signs and symptoms of hepatitis

C, slightly more than one third (32%) of them had good level of knowledge and more than one fifth (22%) of them had poor level of knowledge. Additionally the same table reveals that more than two thirds (68%) of the patients had poor level of knowledge concerning the side effects of HCV antiviral treatment however 26.4% had fair level of knowledge. Those who had good knowledge level were only 5.6% of them. In relation to the complications of HCV, just two fifths (40%) of the patients had good level of knowledge, less than two fifths (37.1%) of them had poor level of knowledge, while 22.9% had fair level of knowledge. Lastly the table presented that more than two fifths (42.7%) of the patients had fair level of knowledge regarding their life style modifications, nearly one third (29.8%) of them had poor level of knowledge and 27.5% had good level of knowledge.

Table (VI) portrays the relation between patients' personal and socio-demographic characteristics and their preventive practices. It is apparent from the table that the highest preventive practice score was encountered among patients belonging to the age group of 60 years and more (54.2%) however, the least score was among those who were less than 30 years (13.6%). A statistically significant relation was documented between patients' age and their preventive practices ($X^2=23.08, P<0.0001$).

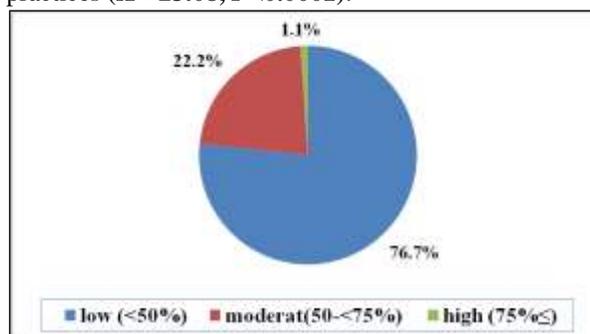


Figure (1): Distribution of the studied patients according to their total HCV related preventive practices score

Regarding the relation between patients' sex and the preventive practices, the table displays that preventive practices score was significantly higher among female patients as 34.7% of them were adhering to HCV preventive practices compared to 17.8% of male patients where $X^2=15.751, P<0.0001$. The table also presents that preventive practices' score was higher among ever married patients than single patients since approximately one quarter (25.9%) of them reporting that they were adhering to HCV preventive practices compared to only 8.8% of single patients. A statistically significant relation was detected between patients' marital status and their preventive practices ($X^2=9.428, P=0.002$). No

statistically significant relation were found between patients' preventive practices and either their residence or educational level where $X^2=2.565$, $P=0.168$ and $X^2=4.904$, $P=0.179$ respectively. With respect to patients' monthly income, the table illustrates that patients whose monthly income ranged from 250 to 500 L.E reported the highest HCV preventive practice score (32.7.1%) followed by those whose income was 1000 L.E /month or more (27.6%). A statistically significant relation was found between patients' monthly income and their preventive practices ($X^2=10.908$, $P=0.012$). The same table also reveals

that HCV preventive practices score was highest among patients with enough monthly income (26%) followed by those who either can save from their income or those having insufficient monthly income (25%, 21.5% respectively). No significant relation between patients' sufficiency of monthly income and their preventive practices ($^{MC}P=0.515$).

Table (VII): Clarifies the relation between patients' preventive practices and their knowledge level. It is evident from the table that, patients' knowledge level had a highly significant impact on their preventive practices ($P<0.0001$).

Table (I): Distribution of the Studied Patients According to their Personal and Socio- demographic Characteristics

Personal and socio-demographic characteristics	Studied patients (n=450)	
	No.	%
Age (years)		
• Less than 30	103	22.9
• 30-	102	22.7
• 40-	133	29.6
• 50-	88	19.6
• 60-	24	5.2
Min-Max	17-74	
Mean±SD	40.2±12.2	
Sex		
• Male	303	67.3
• Female	147	32.7
Residence		
• Rural	203	45.1
• Sub-urban	113	25.1
• Urban	134	29.8
Previous stay in rural area [n=247]		
• No	139	56.3
• Yes	108	43.7
Duration of stay in rural area [n=108]		
Min-Max	2-44	
Mean±SD	21.9±8.7	
Marital status		
• Married	378	84.0
• Single	68	15.1
• Divorced/separated/widow	4	0.9
Duration of marriage [n=378]		
Min-Max	1-46	
Mean±SD	17.9±10.8	
Crowding Index		
• < 2	18	4.0
• 2- < 4	122	27.1
• 4- <5	229	50.9
• 5+	81	18.0
Min-Max	0.3-8.0	
Mean±SD	2.4±1.0	

Table (I): (Cont.)

Personal and socio-demographic characteristics	Studied patients (n=450)	
	No.	%
Level of Education		
• Illiterate	108	24.0
• Read and Write	29	6.4
• Basic education	70	15.6
• Secondary / Technical education	209	46.4
• University or higher education	34	7.6
Occupation		
• Professional work	147	32.7
• Skilled work	34	7.6
• Semi skilled work	46	10.2
• Un skilled work	40	8.9
• Trade work	28	6.2
• Not working	155	34.4
Monthly income		
• < 250	56	12.4
• 250- < 500	49	10.9
• 500- < 1000	182	40.4
• 1000 +	163	36.2
Sufficiency of income		
• Not enough	261	58.0
• Enough	181	40.2
• Enough and saving	8	1.8

Table (II): Distribution of the Studied Patients According to their Infection Control Practices

Infection control Practices	Studied patients (n=450)			
	No		Yes	
	No.	%	No.	%
• Sharing the patients' personal equipments as (razors- tooth brush)	449	99.8	1	0.2
• Sharing nails trim instruments between their family members	207	46.0	243	54.0
• Using the syringe once only	107	23.8	343	76.2
• Informing the health care personnel about their illness, when going to any clinic/hospital	82	18.2	368	81.8
• Donating blood to their family member/others if needed	439	97.6	11	2.4
• Informing the (Hairdressers/ barber) about their illness	341	75.8	109	24.2
• Ask the (Hairdressers/ barber) for not using their tools for others.	325	72.2	125	27.8
• Safe sex (n= 378)	365	96.7	13	3.4
• Stoppage of breastfeeding in case of cracked nipple. (n= 122)	14	11.5	108	88.5

Table (III): Distribution of Patients According to their Practices of Dealing with Wounds

Dealing with wounds	Studied patients (n=450)	
	No.	%
Dealing with wounds		
#Dealing with bleeding wound		
• Cover the wound with cloth or gauze until stoppage of bleeding	301	66.9
• Disinfect the wound with antiseptic solution	236	52.4
• Wash the wound with soap and water then use antiseptic solution	65	14.4
• Wash the wound with water then cover it until stoppage of bleeding	61	13.6
• Wash the wound with water only	12	2.7
• Squeeze the wound	1	0.2

# Disposal of used wound gauze		
• Throwing it directly in garbage	360	80.0
• Putting it in a plastic bag then throwing in garbage	49	10.9
• Burning it	12	2.7
• Throwing it in the toilet	9	2.0
• Others	20	4.4
# Dealing with blood spillage on floor or furniture		
• Washing it with water only	185	41.1
• Wiping it with a cloth only	183	40.7
• Cleaning it with disinfectant solutions	11	24.7
• Do nothing and let it until dry	1	0.2
Disposal of the syringe		
Covering the syringe before throwing		
• No	129	28.7
• Yes	321	71.3
Reason for not covering the syringe [n=129]		
• Pending the needle	42	32.6
• Receiving it in the pharmacy	34	26.4
• Burning it	29	22.5
• A habit	16	12.4
• Throwing in toilet	5	3.9
• Throwing it safely	3	2.3
Place of syringes disposal [n=416]*		
• Garbage	286	68.8
• Putting it in a glass or plastic container	20	4.8
• Toilet	5	1.2
• Burning it	3	0.7
• Others	15	3.6

*Categories are not mutually exclusive;

*Excluded patients receive injection at pharmacy

Table (IV): Distribution of Female Patients According to their Practices During Menstruation

Practices during the menstruation	Female patients (n=147)	
	No.	%
Types of pads used [n=147]		
• Sanitary pads	100	68.0
• Cloth pads	47	32.0
Method used to clean cloth pads [n=47]		
• Washing it alone	39	83.0
• Boiling it	7	14.9
• Washing it in washing machine with other clothes	1	2.1
Disposal of sanitary pads [n=100]		
• Putting it in well closed bag before throwing in garbage	69	69.0
• Throwing it directly in garbage	30	30.0
• Burning it	1	1.0
# Dealing with blood spills on the ground or bath seats		
• Clean with water only	87	59.2
• Clean with disinfectant solutions	46	31.3
• Do nothing	39	26.5
• Clean with tissue paper	5	3.4
# Washing under wears		
• Wash it in washing machine with family members' clothes	90	61.2
• Wash it separately	45	30.6
• Boiled it	12	8.2

*Categories are not mutually exclusive

Table (V): Distribution of the Studied Patients According to their Knowledge Level

Knowledge Scores	Studied patients (n=450)	
	No.	%
Nature of the disease		
• Poor (<50%)	108	24.0
• Fair (50-<75%)	209	46.4
• Good (75%≤)	133	29.6
Min-Max	0.0-100.0	
Mean±SD	59.7±24.4	
Modes of transmission of the disease		
• Poor (<50%)	128	28.4
• Fair (50-<75%)	196	43.6
• Good (75%≤)	126	28.0
Min-Max	15.0-95.0	
Mean±SD	59.6±18.3	
Signs and symptoms of the disease		
• Poor (<50%)	99	22.0
• Fair (50-<75%)	207	46.0
• Good (75%≤)	144	32.0
Min-Max	0.0-100.0	
Mean±SD	61.4±24.8	
Side effects		
• Poor (<50%)	306	68.0
• Fair (50-<75%)	119	26.4
• Good (75%≤)	25	5.6
Min-Max	0.0-100.0	
Mean±SD	42.7±20.5	
Complications of the disease		
• Poor (<50%)	167	37.1
• Fair (50-<75%)	103	22.9
• Good (75%≤)	180	40.0
Min-Max	0.0-100.0	
Mean±SD	61.9±37.6	
Lifestyle of the patients		
• Poor (<50%)	134	29.8
• Fair (50-<75%)	192	42.7
• Good (75%≤)	124	27.5
Min-Max	0.0-100.0	
Mean±SD	55.9±21.1	
Total score		
• Poor (<50%)	136	30.2
• Fair (50-<75%)	250	55.6
• Good (75%≤)	64	14.2
Min-Max	10.0-92.0	
Mean±SD	57.0±15.5	

Table (VI): Relation between Patients' Personal and Socio-demographic Characteristics and their Preventive Practices

Personal & socio-demographic characteristics	Preventive practices score (n=450)			
	Low (n=345)		Moderate/high (n=105)	
	No.	%	No.	%
Age (years)				
• Less than 30	89	86.4	14	13.6
• 30-	80	78.4	22	21.6
• 40-	93	27.0	40	30.1
• 50-	72	69.9	16	18.2
• 60-	11	45.8	13	54.2
Significance	$X^2=23.08; P<0.0001^*$			
Sex				
• Male	249	82.2	54	17.8
• Female	96	65.3	51	34.7
Significance	$X^2=15.751; P<0.0001^*$			
Residence				
• Rural	161	79.3	42	20.7
• Sub-urban	89	78.8	24	21.2
• Urban	95	70.9	39	29.1
Significance	$X^2=2.565; P=0.168$			
Marital status				
• Single	62	91.2	6	8.8
• Ever married	283	74.1	99	25.9
Significance	$X^2=9.428; P=0.002^*$			
Level of Education				
• Illiterate/read and write	104	75.9	33	24.1
• Basic education	66	81.5	15	18.5
• Technical education	119	79.3	31	20.7
• University/higher education	56	68.3	26	31.7
Significance	$X^2=4.904; P=0.179$			
Occupational status				
• Not working	103	66.5	52	33.5
• Working	242	82.0	53	18.0
Significance	$X^2=13.79; P=0.0002^*$			
Monthly income				
• Less than 250	51	91.1	5	8.9
• 250-	33	67.3	16	32.7
• 500-	143	78.6	39	21.4
• 1000 or more	118	72.4	45	27.6
Significance	$X^2=10.908; P=0.012^*$			
Sufficiency of income				
• Not enough	205	78.5	56	21.5
• Enough	134	74.0	47	26.0
• Enough and can save	6	75.0	2	25.0
Significance	$^{MC}P=0.515$			

X^2 : Chi-Square test; ^{MC}P : Monte Carlo test; *Significant at $P \leq 0.05$

Table (VII): Relation between Patients' Knowledge Level and their Preventive Practices

Preventive practices level	Knowledge score	
	R	P
	0.181	<0.0001*

r: Spearman Rho correlation coefficient; *significant at $P \leq 0.05$

Discussion:

Hepatitis C viral infection is one of the most contagious diseases that have great social and economic impact which may touch the future of the young generation and hinder the community. It is approximately 10-15 times more infectious than HIV. It can spread by close contact to infected blood (23,

24). Infection control practices are essential to all patients' family members and have a great impact on their health. It can be as simple as hand washing and as sophisticated as high-level disinfection of surgical instruments (25,26,27) so, the present study was done with the aim of assessing preventive practices adopted by hepatitis C patients in Alexandria and identifies factors

affecting their practices. This study will help to shed the light on the disease; its onset, diagnosis, signs and symptoms, complications, investigations, prognosis, treatment and follow up, methods of infection, risk factors for transmission, as well as prevention and control measures adopted by patients and their families. Additionally, results of the current study can assist the concerned authorities and practitioners in planning and implementing comprehensive HCV strategies for prevention and control. Unfortunately, evidence drawn from the present study revealed that more than three quarters of the patients had low preventive practices score regarding the hepatitis C infection and 22.2% of them had moderate score. Gaining such score reflect the malpractices adopted by most of the patients since more than half of them reported that they were sharing their nails trim instruments with other family members. In addition, less than one quarter of them were reusing the syringes several times. Moreover, the vast majority of the patients didn't practice safe sex (use the condom during sexual intercourse). In addition, more than one tenth of female patients didn't agree to stop breastfeeding in case of cracked nipple. They were strongly believed that, nail trims, sexual relation and breast feeding didn't transmit HCV infection to other family members as HCV can be only transmitted by blood. This creates a massive need of those patients for health education about different HCV mode of transmission and how to prevent such transmission to others.

Although more than three quarters of the patients were informing the health care providers about their illness when seeking medical help, the highest percent of them didn't tell the hairdressers /barber about their disease or ask them not to use their tools for other clients. This may be due to fear from stigmatization and imparrasement experienced by the patients when others knew about their illness. Along

the same findings, Stoller et al in 2009 and Franciscus et al in 2008 documented that the lowest percentage of the studied sample were followed the health related behaviors to prevent the transmission of HCV to others^(28,29). The opposite was illustrated by Bachand who reported that more than half of the patients follow the infection control practices related to condom use, and wound care⁽³⁰⁾.

Sharaf El-Din et al at 2010 when studying the intrafamilial transmission of HCV reported that following the preventive practices was linked to many factors which may affect the patients' behaviors modification such as age, educational level, familial background, occupational status, health status, monthly income, and sources of information⁽³¹⁾

Regarding the relation between patient's personal and socio-demographic characteristics and

their preventive practices; the present study findings revealed a significant association between patients' preventive practices scores and each of their age, sex, marital status, occupational status, and monthly income.

Patients' age is one of the epidemiological factors that had an important effect on persons' behaviors and abilities to adhere to the infection control practices^(21,32). In this regard, the current study findings showed that the highest preventive practices' score was among older patients (60 years and more) however, the least score was among the youngest (less than 30 years). This result could be attributed to the fact that, aging contributes greatly to the individual's experience with the disease; by increasing persons' age they had more chance to get more information and to be more aware with the practices that had positive effect on their health. The same was illustrated by Iwasaki et al in 2006, Girgis et al in 2012, Mohsen et al and Davis et al in 2011 who concluded that patients' age is an important factor contributing to the adherence to implement the preventive practices in order to prevent HCV transmission to other family members^(33,34,35,36).

The present study revealed that patients' sex had a significant effect on their preventive practices where preventive practices score was higher among female patients compared to male ones. This may be reflecting the fact that, family responsibilities are exclusively a women's responsibility. As being the only responsible person for household management and caring for their family, they tried to apply the best possible preventive practices in order to prevent transmission of any infectious disease even HCV to their family members.

This finding is in line with Lorig et al in 2001 who study the effect of a self-management program on patients with chronic disease; he found a significant relation between patients' sex and their adherence to preventive practices. He also reported a significant improvement in their practices after the program implementation such as; hand washing, covering the wounds and using individual shaving articles, scissors, tooth brushes, disposable syringes, using condom and disinfect blood spots⁽³⁷⁾.

With respect to marital status, results of the current study illustrated that preventive practices score was higher among married patients than single ones. This may be attributed to their keenness about their partners and eagerness to adopt the preventive practices to avoid subjecting them to infection. These finding were matched with that of Kelly et al in 2013, Hawker et al in 2001 and Ibrahim who found that, married patients had better adherence to HCV preventive practices than those single, widowed or divorced^(38,39,40).

It is amazing to note that, nonworking patients in the present work were more adhering to apply the

HCV preventive practices than working ones. These results may be due to the fact that working patients have more responsibilities and lack of time to follow HCV preventive practices than nonworking. These findings were supported by El-Sadawy et al in 2004 and Bahnasy in 2000^(41,42).

The present study also found that, patients' knowledge level had a highly significant impact on their preventive practices. Yet, more attention should be given to provide health education about risk factors and prevention of infections to the general public and all should be informed that this disease can affect any age, persist for one's whole life and infected people may remain asymptomatic and develop chronic complications like liver cancer. Similarly, Khuwaja et al in 2002 stated that knowing the facts and having proper attitudes and behaviors are critical to prevent the spread of these infections⁽⁴³⁾.

In relation to female patients' practices during menstruation, findings of the current study declared that although the highest percent (69%) of female patient were using sanitary pads during the menstruation and they follow the infection control practices when disposing it, the highest percent of them didn't follow the infection control practices when washing cloth pads, cleaning blood spills on the ground or bath seats, and they washing their underwear with families' clothes. This could be explained by many factors; first; lack of female's knowledge about mode of HCV transmission and the needed infection control practices to prevent the infection, second; most of female patients have limited financial resources that can afford the usual use of disposable pads, third; others were keeping the pads for their daughters instead of themselves and others prefer to use cloth pads as they were used to. These findings were confirmed by Morsi at 2009 who reported that the highest percent (79%) of female patients didn't follow the infection control measures when dealing with cloth pads, their underwear, and cleaning the blood spills. They were immersing them in water after that washing them in washing machine with families' clothes⁽⁴⁴⁾.

The present work reflects the fact that, behavior modification is the only key factor in control of HCV silent epidemic. This can be achieved by raising the community awareness about the nature of the disease, modes of transmission, and the preventive practices through conducting a health awareness campaigns for all community members especially in high risk areas. Everyone; patients, family members, health care providers, and community leaders at everywhere; home, health care settings, school, mosques, churches, and even the clubs must be assumed the positive role and responsibility by joining together in order to combat this silent killer (HCV).

Conclusion:

Based upon the results of the current study, it could be concluded that most of the studied patients had low level of preventive practices about hepatitis C infection and only few of them had high preventive practices score. It was also observed that patients' age, sex, marital status, occupational status, and monthly income had significant effect on their preventive practices. **Moreover**, patients' knowledge level had a highly significant impact on their preventive practices.

Recommendations:

In light of the present study findings, the following recommendations could be made:

- Raise the community awareness regarding HCV specific risk factors and behaviors, mode of transmission and preventive measures.
- Disseminate special message for community barbers, hairdressers, and traditional birth attendants to inform them about the importance of following preventive measures in reducing the disease burden.
- Organize regular counseling sessions for meeting the patients' needs and solving their problems by providing them with clear, full and accurate information in both verbal and written form.

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